

REMARKS

Claims 1-22 are in the application.

Applicants have noted that the Examiner has indicated that claim 22 is allowed and claims 19 and 20 would be allowable if rewritten in independent form.

However, applicants respectfully submit that, for the reasons set forth below, all of the claims in the application are patentable over the art of record.

Accordingly, reconsideration and withdrawal of the rejection of claims 1, 2, and 10-12 under 35 U.S.C. 102(b) as being anticipated by Justus et al., are respectfully requested.

As a result of the foregoing amendment, claims 1 and 10 have been amended to make it clear that the surface of the roll is treated prior to the use of the roll, i.e., during manufacture of the roll.

Support for the amendments to claims 1 and 10 can be found on page 7, lines 10-15 of the specification.

The present invention is directed to a method of manufacturing rolls for the paper industry and to a roll manufactured in accordance with the method. The rolls are manufactured by a manufacturer who supplies the rolls for use in the paper industry.

The reference to Justus et al. is directed to a paper roll which is to be ground during the operation in the paper industry. Accordingly, this roll differs from the roll according to the present invention because the surface of the roll of the present invention is treated prior to the first use of the roll.

In accordance with the present invention, the rolls are heated by the roll manufacturer prior to the first use of the roll to a temperature which corresponds to the later operating temperature and the rolls are ground by roll grinding machines, so that the shape and/or imbalances of the rolls, which during operating temperatures may very well be different from those of the same roll in the cold state, can be compensated.

The reference to Justus et al., on the other hand, discloses a grinding device which is used during operation in order to influence the surface contour of the roll, as discussed in column 1, line 46, of the reference to Justus et al.. Consequently, this grinding process influences the surface of the roll, for example,

with respect to roughness. In the reference, there is nothing to indicate that imbalances are compensated or the shape of the roll is changed.

With respect to the method according to the present invention, it is to be emphasized that the method serves for manufacturing rolls. The reference to Justus et al., on the other hand, does not manufacture rolls, but only works on the rolls during the operation thereof. In this connection, it should be noted that, in the past, roll bodies were cast. After the roll body cooled or during the cooling procedure, the surfaces were tempered, i.e., held at a certain temperature. The completely cooled body was then mechanically finished. The cold roll body was finished by grinding and balancing in such a way that as little imbalances as possible occurred during the rotation of the roll body and the shape of the roll was optimal.

Applicants have recognized that, at the increasingly higher operating temperatures and the increasing speeds, the imbalance and shape changes resulting from thermal deformations are so great that unsatisfactory results are obtained in the paper manufacture. Consequently, the inventors have discovered that the cast and possibly tempered and cooled roll should be heated up once again to those temperatures as they later occur during the paper

manufacturing operation. At these temperatures the rolls are now mechanically processed, i.e., ground and possibly balanced. Once these rolls cool, they may have imbalances and inaccurate shapes in the cold state. However, when the rolls are later put into operation by the paper manufacturer and the temperature of the rolls is raised to operating temperature, the roll body then once again has no imbalances and an optimum shape.

Since the reference to Justus et al. does not relate to a manufacturing process, but to grinding during operation, this reference cannot anticipate the method claims of the present application. Even if it is assumed that in the reference imbalances can be compensated and shapes can be changed, and not only the surface is influenced, this would still mean that a grinding device would have to be provided for each individual roll of a calender. As a result, the machine for manufacturing paper is very expensive. It would then be advantageous in this connection if all rolls for such machines were to be ground on a roll grinding machine during the roll manufacture. This would mean a reduction of the number of grinding machines. In addition, the operation material produced during grinding according to Justus et al., e.g., from the upper rolls of a calender, would drop onto the paper to be manufactured, which would significantly reduce the quality.

In summary, in accordance with the reference to Justus et al., as mentioned in column 2, lines 16-26, changes in the contour of the roll which result from temperature differences are compensated by grinding. In accordance with the present invention, the roll temperature is raised during the manufacturing process to the operating temperature and is externally cooled in order to simulate the actual conditions during the paper manufacture.

Accordingly, it is submitted that the rejection of the claims in view of Justus et al. should be withdrawn.

Reconsideration and withdrawal of the rejection of claims 1-8, 10-12, 16-18 and 21 under 35 U.S.C. 102(b) as being anticipated by Vahapesola, are also respectfully requested.

The reference to Vahapesola is directed to a paper manufacturing roll produced in accordance with the following steps:

1. Casting of the roll body;
2. tempering of the roll; and
3. grinding of the roll.

Tempering of the roll has the purpose of increasing the toughness of the roll surface. As a consequence, the hardness and strength of the roll are slightly reduced. For tempering, the

temperature of the roll must be raised to a temperature which slightly exceeds the later operating temperatures. If the later operating temperatures were higher than the tempering temperatures, then the roll would be further tempered during its operation. This would result in undesired structural changes during the operation. Therefore, the reference suggests selecting the tempering temperature in dependence on the later operating temperature.

The tempering process includes heating the cast and cooled roll to tempering temperature, holding the roll at this tempering temperature and then cooling the roll. In accordance with the reference, this tempering process, i.e., cooling of the roll, is to be followed by a grinding process. The reference nowhere mentions grinding the roll in the hot state. The reference merely mentions that the roll is first tempered and cooled, and then ground.

Since grinding in accordance with the reference to Justus et al. merely constitutes a surface treatment, for example, polishing, the reference to Justus et al. could also not provide a suggestion for carrying out the grinding of the cold roll for influencing the balanced operation of the roll in the hot state.

The Examiner has also cited the reference to Thiess et al. in rejecting the claims.

The reference to Thiess et al. is essentially directed to the heat treatment of rolls. Rough machining operations may be carried out between the individual heat treatment steps. However, the reference to Thiess et al. nowhere mentions that the rough machining operation is a grinding procedure. Rather, as mentioned in column 5, line 25-30, the rough machining operation removes scale and decarburizes the roll. The reference also does not mention that a grinding process is to be carried out at a temperature which corresponds to the later operating temperature.

The Examiner has also cited the combination of the reference to Justus et al. and Smook in rejecting claim 3. Smook discloses the operating temperature of paper rolls. Justus et al. discloses grinding paper rolls during operation. However, this does not make it obvious to heat the roll prior to operation during the manufacture of the roll to a temperature which corresponds to the later operating temperature and to grind the roll at this temperature, wherein the grinding process does not serve for a surface treatment, but for compensating imbalances and for influencing the shape of the roll. Accordingly, the present invention as claimed is also not disclosed or suggested by the combination of the references to Justus et al. and Smook.

Accordingly, applicants respectfully submit that the present

invention as claimed is patentable over the art of record because none of the references discloses grinding the roll in order to compensate for imbalances and for changing the shape of the roll during the manufacturing process prior to the first use of the roll.

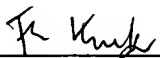
Therefore, in view of the foregoing, it is submitted that this application is now in condition for allowance and such allowance is respectfully solicited.

Any additional fees or charges required at this time in connection with the application may be charged to Patent and Trademark Office Deposit Account No. 11-1835.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on January 27, 2004.

By: _____

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